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| 10/521,795  | 10/27/2005  | Bernhard Nellessen   | 745691-35           | 1968             |
| 22204 7590 07/16/2008<br>NIXON PEABODY, LLP<br>401 9TH STREET, NW<br>SUITE 900<br>WASHINGTON, DC 20004-2128 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| CORDRAY, DENNIS R   |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/521,795

**Applicant(s)**

NELLESSEN ET AL.

**Examiner**

DENNIS CORDRAY

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-11,13,14 and 17-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13,14 and 17-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/20/2008 has been entered.

### ***Response to Arguments***

Applicant's amendments filed 3/20/2008 have overcome the anticipation rejections of record. Therefore, the rejections are withdrawn. The rejections based on obviousness are maintained and have been amended to address the amendments to the claims. In addition, new grounds of rejection are presented as detailed below, based on a modified interpretation of the claims.

Applicant's arguments filed 3/20/2008 have been fully considered but they are not persuasive.

Regarding the dispersant of Mollett not being taught as a deinking additive, it is not necessary that the prior art suggest that an additive achieves the same advantage or result discovered by applicant. The claimed polymers are made obvious over the disclosure of Mollett et al, as discussed in the rejections below, thus the claimed properties or functions are presumed to be obvious.

Regarding the argument that the polyalkoxylated organopolysiloxanes of Mollett et al are not needed if there are other surfactants to disperse the resin powder, "[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Regarding Richmann et al, the background section states that "Conventional deinking processes have shown minimal success in dealing with dry toner electrostatic printing inks..." (col 1, lines 22-24). In conventional deinking processes, "secondary fiber is mechanically pulped and contacted with an aqueous medium containing a surfactant. The dispersed ink is separated from pulp fibers by such means as washing or flotation." (col 1, lines 16-21). Richmann further states, "Traditional deinking processes utilize a wide variety of high HLB (generally greater than 10) ... surfactants or dispersants to wet or disperse ink particles to a range of size (0.5 to 15 microns) which allows for their most efficient subsequent removal by washing and/or froth flotation processes." (col 1, lines 61-66). Thus conventional processes using a high HLB surfactant with removal of ink particles by washing or flotation have had minimal success.

Richmann et al states that the their invention uses a low HLB surfactant that (1) allows particles to aggregate in a critical range of size and density that affords their most efficient removal by centrifugal cleaners and (2) allows for aggregation at an ambient pH, alleviating the need for caustic or acid tanks in the mill environment (col 1,

lines 39-54; col 2, lines 1-4). Dimethylpolysiloxane ethoxylates and propoxylates having molecular weight from 600 to 20,000 are anticipated to be effective surfactants and an HLB from about 0.5 to 10 is disclosed (col 4, lines 42-50). Richmann et al discloses examples using dimethylpolysiloxane ethoxylates and propoxylates that result in aggregated ink particles having a size approximately greater than 10 microns. The aggregates in the examples are separated by centrifugal cleaners (col 1, lines 45-50; col 6, Table 1 footnotes).

Richmann et al thus teaches that both centrifugal cleaning and flotation are usable for "most efficient removal" of particles in a size range of 10-15 microns and that such a size range is produced by polymers overlapping the claimed polymers. Flotation is not discredited, but disclosed as a known method that is also useful with the same particle aggregate sizes. While not the preferred method of Richmann et al, flotation was generally known in the art and would have been obvious to one of ordinary skill in the art to use flotation as a functionally equivalent option to separate the particles in the disclosed size range.

Regarding the argument against the Examiner's holding of additional combinations in refusing entry of the amended claims, amended Claim 1 requires a limited molecular weight range and a limited molar range of silicon atoms substituted by group Z. The limitations were not previously required in claims depending only from Claim 1, thus new combinations were presented by the amendment that required further consideration or search. At the very least, consideration of potential indefiniteness and/or new matter issues would have been required.

The evidence of additional experiments has been addressed in the previous Advisory Action. However, further comments appear necessary. With regard to Siloxane G, Applicant's arguments are convincing. However, Siloxane G is a single example of a composition that falls within the bounds of Claim 1, and which has not previously been indicated as allowable, that successfully gave the required whiteness level. The example, along with successful Siloxanes A, D and H (which all are very similar, except for changes in molecular weight) and non-successful Siloxanes B, C, E, F, I, J and K (which lie far outside of one or more of the claimed limitations) are not commensurate with the scope of the claim, which recites siloxanes having an almost unlimited variety of substituents, a broad range of molecular weight, a broad range in the degree of alkoxylation, and a broad range of Z substituted silicon atoms. The amount of additive used, 0.03% based on the weight of the paper fiber, to generate the data of Table 3 is outside of the claimed range of addition. In addition, Siloxane G fails to exhibit an HLB within the claimed ranges, and none of the Siloxanes have an HLB within the range recited in dependent Claim 17, thus the criticality of the claimed HLB ranges is negated. There is also inadequate support for the apparently critical endpoints of the other disclosed ranges.

The polyalkoxylated organopolysiloxanes disclosed by Mollett et al and Richmann et al significantly overlay the claimed compositions and, absent convincing evidence of unobvious properties commensurate with the scope of the claims, embodiments falling within the scope of the instant claims would have been obvious to one of ordinary skill in the art.

The experimental evidence has not been submitted in the form of an Affidavit (see a portion of MPEP section 716.01(c) reproduced below).

**716.01(c) Probative Value of Objective Evidence**

I. TO BE OF PROBATIVE VALUE, ANY OBJECTIVE EVIDENCE SHOULD BE SUPPORTED BY ACTUAL PROOF Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984) ("It is well settled that unexpected results must be established by factual evidence." "[A]ppellants have not presented any experimental data showing that prior heat-shrinkable articles split. Due to the absence of tests comparing appellant's heat shrinkable articles with those of the closest prior art, we conclude that appellant's assertions of unexpected results constitute mere argument."). See also *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *Ex parte George*, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-11, 13, 14 and 15-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "q and s are independently selected from the group consisting of 0 and an integer such that  $1 \leq q+s \leq 400$ ";. It is not clear if the intended limits of q and s are such that

- 1) q and s can both be 0 or, in the alternative, q and/or s are integers such that  $1 \leq q+s \leq 400$  (embodies both q and s equal to 0); or
- 2) q and s are independently 0 or an integer, with the proviso that  $1 \leq q+s \leq 400$  (at least one of q or s must not be 0).

In the first case, group Z can be the same as  $R^1$  in some embodiments.

Claim 18 contains a similar limitation with respect to the organic polyether.

The remaining claims ultimately depend from and inherit the indefiniteness of Claim 1 or Claim 18.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-5, 7-11, 13, 14, 18, 23-29 are rejected under 35 U.S.C. 103(a) as unpatentable over Mollett et al (4919754).

Claims 1, 3-5, 7-11, 13, 14, 18, 22, 24-25 and 27-29: Mollett et al discloses a method for deinking recycled pulp comprising pulping the waste paper in an aqueous suspension to which a deinking additive has been added and removing the detached ink



by flotation (col 2, lines 13-24). The additive preferably comprises a curable resin precursor mixture of a dihydroxy poly(dialkyl)siloxane and a poly(alkylhydrosiloxane) crosslinking agent (col 3, lines 3-9). The alkyl groups are preferably 1-4 carbons. The prepolymer has a molecular weight 5,000 to 70,000, preferably from 10,000 to 50,000 (col 3, lines 14-16). The structure reads on the claimed organo-modified siloxane where q and s in group Z are both zero. The resin precursor is added in an amount from 0.1 to 10% by weight of the pulp solids (col 4, lines 43-47). The resin precursor is not substantive to the cellulosic fibers of the pulp (Abs).

Alternatively, the relatively hydrophobic resin precursor is dispersed in water (thus forming an aqueous emulsion) using a water-soluble surfactant or dispersant, which can be a polyalkoxylated organopolysiloxane (col 3, lines 29-36, col 4, line 38). In an example, polydimethylsiloxanes are used as the resin precursor and polyethyleneoxy/polypropyleneoxy-functional polydimethylsiloxane as the dispersant (col 6, lines 15-22). The dispersant is present in an amount from 0.1 to 20% by weight of the resin precursor (col 3, lines 47-49), thus is added in an amount from 0.0001 to 2% by weight of the pulp solids, the ranges encompassing the claimed addition range. The resin precursor can be suspended in the pulping liquor (in the pulping stage) or added shortly before pulping (before the pulping stage) (col 4, lines 55-58).

While not explicitly disclosed, it would have been obvious to one of ordinary skill in the art to use polyalkoxylated organopolysiloxane dispersant having a similar molecular weight as the precursor to make the dispersant more miscible therewith, as required by Mollett et al (col 3, lines 29-31). The claimed molar substitution of silicon

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atoms with alkoxyated substituents would have been obvious to obtain the required water solubility properties.

The claimed organo-modified polysiloxane polymer would have been obvious to one of ordinary skill in the art as embodiments of the disclosure of Mollett et al, either over the resin precursor in some embodiments or over the dispersant polymer. The disclosed polyalkoxyated organopolysiloxane polymers will, in addition to acting as a dispersant, function as a deinking agent because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent. For similar reasons, it would have been obvious to one of ordinary skill in the art to obtain the claimed HLB.

Mollett et al teaches that the pigment particles are removed by conventional means, such as froth flotation (col 2, lines 17-24).

Claim 23: In the absence of evidence showing special properties thereof, a gum-based self-emulsifying polysiloxane would have been obvious over the disclosure of Mollett et al since the ethoxyated polysiloxane is intended to be a dispersant.

Claim 26: Mollett et al does not disclose the pH of the process. However, operating at an ambient pH would have been obvious to alleviate the need for caustic or acid tanks in the mill environment

Claims 1, 3-5, 7-11, 13, 14, 18-19, 23-29 are rejected under 35 U.S.C. 103(a) as unpatentable over Richmann et al (5248388).

Claims 1-5, 7-14, 18, 24-29: Richmann et al discloses a method using surfactants having an HLB from 0.5 to 10 for deinking of electrostatic printed wastepaper (Abstract). The surfactants include block copolymers of ethylene oxide and propylene oxide, alcohol ethoxylates and dimethylpolysiloxane ethoxylates (col 2, lines 18-22 and 38-54, col 3, lines 10-28; col 4, lines 42-46). The molecular weight of the dimethylpolysiloxane ethoxylates is from 600 to 20,000 (col 4, lines 42-46). The disclosed surfactants allow the process to operate at ambient pH (substantially neutral), thus alleviating the need for caustic or acid tanks in the mill environment (col 2, lines 38-43). The amount of surfactant added to the aqueous slurry of wastepaper is from 5-20 lb/ton of fiber or 0.25 to 1% by weight (Claim 13).

Richmann discloses pulping the paper to obtain a slurry and adding the deinking composition to the pulp (col 5, line 53 to col 6, line 2). Richmann discloses separation of aggregated ink particles of a size greater than 10 microns by centrifugal cleaners (col 1, lines 45-50; col 6, Table 1 footnotes). Richmann also teaches that a particle size range from 0.5 to 15 microns can be efficiently separated by traditional methods of froth flotation and washing (col 1, lines 61-66). Thus, while not the preferred method of Richmann et al, it was generally known and would have been obvious to one of ordinary skill in the art to use flotation as a functionally equivalent option to separate the particles in the size range disclosed.

The claimed organo-modified polysiloxane polymers having the claimed molar substitution of silicon atoms with alkoxylated substituents would have been obvious to one of ordinary skill in the art as embodiments of the disclosure of Richmann et al. It also would have been obvious to one of ordinary skill in the art to obtain the claimed HLB for reasons given previously.

Claim 19: A mixture of dimethylpolysiloxane ethoxylates and copolymers of ethylene oxide and propylene oxide (polyether) would have been obvious to one of ordinary skill in the art, since both are disclosed for the same purpose. "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Claim 23: In the absence of evidence showing special properties thereof, a gum-based self-emulsifying polysiloxane would have been obvious over the disclosure of Richmann et al to aid in the dispersion thereof into the pulp.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mollett et al in view of Richmann et al.

The disclosures of Mollett et al and Richmann et al are detailed above. Mollett et al does not disclose inclusion of an organic polyether.

Richmann et al teaches the use of the claimed organic polyether as a suitable deinking additive.

The art of Mollett et al, Richmann et al, and the instant invention are analogous as pertaining to deinking agents. For reasons given above, a mixture of dimethylpolysiloxane ethoxylates and copolymers of ethylene oxide and propylene oxide (polyether) would have been obvious to one of ordinary skill in the art, since both function for the same purpose.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mollett et al or Richmann et al in view of Ishibashi et al (5228369).

Mollett et al and Richmann et al do not disclose the use of fatty acids in the process.

Ishibashi et al discloses a deinking process in which a mixture of fatty acids are used as the deinking agent (Abs). The ink particles are removed by flotation (col 1, lines 15-21). In one embodiment, the mixture comprises essentially of fatty acids having from 8 to 24 carbon atoms, with the average carbon number ranging from 12.7 to 22.5 and from 9.6% to 70.6% of the mixture consists of fatty acids having from 20 to 24 carbons (col 3, lines 7-15). Some specific examples of the fatty acids include lauric acid, myristic acid, palmitic acid, stearic acid and oleic acid, which overlay the claimed species (col 5, lines 3-11). The disclosure is not limited to the particular examples recited, but generally discloses acids having from 8 to 24 carbon atoms as well, which include the remainder of the claimed species, or, at least, it would have been obvious to

one of ordinary skill in the art to use the claimed species in the absence of data showing special properties for specific acids.

In addition, applicant discloses commercially available fatty-acid based deinking agents, which would have been known to one of ordinary skill in the art at the time of the invention.

The art of Mollett et al, Richmann et al, Ishibashi et al and the instant invention are analogous as pertaining to deinking agents. For the reasons given in the rejection of Claim 19 above, it would have been obvious to one of ordinary skill in the art to use one or more fatty acids in the deinking process of Mollett et al or Richmann et al in view of Ishibashi et al as a functionally equivalent option.

#### ***Allowable Subject Matter***

Claims 6 and 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The specific composition claimed is shown to result in significantly increased whiteness of deinked pulps over pulps treated with commercially available deinking agents (pp 8-10, Tables 1-2, Siloxane 1). In view of the provided data, the specific compositions claimed are not disclosed with sufficient specificity in the cited prior art, constitute anticipation, nor would they be obvious.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dennis Cordray/  
Examiner, Art Unit 1791

/José A Fortuna/  
Primary Examiner, Art Unit 1791

**Application Number****Application/Control No.**

10/521,795

**Examiner**

DENNIS CORDRAY

**Applicant(s)/Patent under  
Reexamination**

NELLESSEN ET AL.

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